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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,588	08/29/2003	Ryuji Mori	81716.0110	9148

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EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/652,588

Applicant(s)

MORI ET AL.

Examiner

Michelle R. Connelly-Cushwa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1203</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The prior art documents submitted by applicant in the Information Disclosure Statement filed on December 8, 2003 have all been considered and made of record (note the attached copy of form PTO-1449).

Drawings

Twelve (12) sheets of formal drawings were filed on August 29, 2003 and have been accepted by the Examiner.

Specification

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 4 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Higashikawa (US 6,318,910 B1).

Regarding claim 1; Higashikawa discloses an optical element housing package (see Figure 4), comprising:

- a base body (5, case) having a placement portion formed on one surface thereof, on which an optical element (4, semiconductor laser) is placed; and
- a frame body (10, airtight joint) attached to the one surface of the base body so as to surround the placement portion, the frame body having an optical fiber introducing portion (6, fiber introducing section) formed in one end part of its side surface, the optical fiber introducing portion being shaped as a groove having a substantially U-shaped sectional profile, through which an optical fiber (7) is inserted and brazed (see column 5, lines 54-56 and column 7, lines 28-32), wherein a lid body (8, cover) is brazed (see column 6, lines 60-64) to one surface of the frame body (10).

Regarding claim 3; the package further comprises input/output terminal conductors that are led from the placement portion to another surface opposed to the one surface of the base body (see Figure 4, the input/output terminal conductors located on the opposing surface are not labeled).

Regarding claim 4; the optical element (4) is a laser that couples light having a wavelength to the optical fiber (7).

Regarding claim 22; Figure 4 of Higashikawa discloses an optical module comprising:

- the optical element housing of claim 1;
- an optical element (4) placed on the placement portion;
- an optical fiber (7) inserted through the optical fiber introducing portion and subjected to brazing; and
- a lid body (8) brazed to the one surface of the frame body, for hermetically sealing the optical element and the optical fiber introducing portion (6).

Claims 1, 2, 13, 14, 16, 17, 19, 20 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Velsher et al. (US 6,796,725 B2).

Regarding claim 1; Velsher et al. discloses an optical element housing package (see Figures 1-4), comprising:

- a base body having a placement portion (34) formed on one surface thereof, on which an optical element (50) is placed; and
- a frame body (14) attached to the one surface of the base body so as to surround the placement portion, the frame body having an optical fiber introducing portion (54) formed in one end part (24, 26) of its side surface, the optical fiber introducing portion being shaped as a groove having a substantially U-shaped sectional profile, through which and optical fiber (22) is inserted and brazed (see column 2, lines 64-67),

wherein a lid body (16) is brazed (see column 2, lines 60-64) to one surface of the frame body (14).

Regarding claim 2; Figures 1-4 disclose an input/output terminal (18) fitted in an input/output terminal fitting portion shaped as a through hole or a notch, the input/output terminal fitting portion being formed on the side of the frame body (14) or in that part of the base body which is located inside the frame body.

Regarding claims 13 and 14; Velsher et al. discloses that the part of the optical fiber located in the optical fiber introducing portion may be exposed and the bared core coated with a plating film (see column 2, lines 64-67).

Regarding claims 16 and 17; the frame body (14) has an optical fiber supporting member (36, 38) bonded to the base body side surface thereof so as to be located below the optical fiber introducing portion.

Regarding claims 19 and 20; the lid body (16) includes a flange portion (46, 48) that is bonded to the top surface of the optical fiber supporting member (36, 38).

Regarding claim 22; Figures 1-4 of Velsher et al. disclose an optical module (10) comprising:

- the optical element housing of claim 1;
- an optical element (50) placed on the placement portion (34);
- an optical fiber (22) inserted through the optical fiber introducing portion (54) and subjected to brazing; and

- a lid body (16) brazed to the one surface of the frame body, for hermetically sealing the optical element and the optical fiber introducing portion.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7, 9, 10, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashikawa (US 6,318,910 B1).

Regarding claims 5 and 6; Higashikawa discloses all of the limitations of these claims as applied above, except for specifically stating that the input/output terminal conductor allows input and output of a high-frequency signal of 10 GHz or above. One of ordinary skill in the art would have found it obvious to have the input/output terminal conductor allow input and output of a high-frequency signal of 10 GHz or above in order to operate a laser requiring a high-frequency signal, since it has been held that wherein the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233) and that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

Regarding claims 7 and 9; Higashikawa discloses all of the limitations of these claims as applied above, except for the optical fiber introducing portion having an opening having width in a range from $r + 5 \mu\text{m}$ to $r + 200 \mu\text{m}$, and a depth in a range from $r + 5 \mu\text{m}$ to $r + 200 \mu\text{m}$, in which r is a diameter of the optical fiber. It is clear from Figure 4 of Higashikawa that the optical fiber introducing portion is larger than, but proportional to the size of the optical fiber in order to accurately locate and secure the optical fiber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the width of the optical fiber introducing portion (6) be in a range from $r + 5 \mu\text{m}$ to $r + 200 \mu\text{m}$, and the depth of the optical fiber introducing portion be in a range from $r + 5 \mu\text{m}$ to $r + 200 \mu\text{m}$, in which r is a diameter of the optical fiber, in order to accurately position and secure the optical fiber and ensure that the optical fiber fits into the optical fiber introducing portion, since it has been held that wherein the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233) and that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

Regarding claims 10 and 12; Higashikawa discloses all of the limitations of these claims as applied above, except for a thickness of the frame body being in a range from 0.7 mm to 1.8 mm. It is clear from Figure 4 of Higashikawa that thickness of the frame body is sized to allow the semiconductor laser (4) and silicon substrate (1) supporting the laser to fit within the package, while minimizing the space inside the package to ensure that the optical package is compact. It would have been obvious to one having

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ordinary skill in the art at the time the invention was made to have a thickness of the frame body be in a range from 0.7 mm to 1.8 mm., in order to allow a semiconductor laser (4) and silicon substrate (1) supporting the laser to fit within the package, while minimizing the space inside the package to ensure that the optical package is compact, since it has been held that wherein the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233) and that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

Regarding claim 15; Higashikawa discloses all of the limitations of claim 15 as applied above, except for the part of the optical fiber located in the optical fiber introducing portion being exposed, and the bared core having its outer circumference coated with a plating film. Higashikawa teaches that the optical fiber, including the coating, is fixed with a solder having a low melting point. A known alternative for fixing optical fibers to optical modules includes removing a coating from the fiber and coating the bared core with a metallic plating film for soldering. Therefore, one of ordinary skill in the art would have found it obvious to fix the optical fibers to the optical module by removing a coating from the fiber to be fixed and coating the bared core with a plating film, since this is a well known alternative method.

Claims 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashikawa (US 6,318,910 B1) in view of Velsher et al. (US 6,796,725 B2).

Regarding claims 18 and 21; Higashikawa discloses all of the limitations of these claims as applied above, except for the frame body having an optical fiber supporting member bonded to the base body side surface thereof so as to be located below the optical fiber introducing portion and for the lid body including a flange portion that is bonded to the top surface of the optical fiber supporting member.

Velsher et al. teaches that an optical fiber supporting member (36, 38) may be bonded to a base body side surface of a frame body (14) in an optical module so as to be located below an optical fiber introducing portion and that a flange portion (46, 48) may be included on a lid body (16) of the optical module and bonded to the top surface of the optical fiber supporting member in order to form end pipes (56, 58) that provide additional support, stress relief and protection for optical fibers connected to the optical module.

Therefore, one of ordinary skill in the art would have found it obvious to incorporate an optical fiber supporting member bonded to the base body side surface of the frame body so as to be located below the optical fiber introducing portion and a flange portion on the lid body that is bonded to the top surface of the optical fiber supporting member in the invention of Higashikawa in order to provide additional support, stress relief and protection for optical fibers connected to the optical module/package disclosed by Higashikawa.

Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Velsher et al. (US 6,796,725 B2).

Regarding claim 8; Velsher et al. discloses all of the limitations of claim 8 as applied above, except for the optical fiber introducing portion having an opening having width in a range from $r + 5 \mu\text{m}$ to $r + 200 \mu\text{m}$, and a depth in a range from $r + 5 \mu\text{m}$ to $r + 200 \mu\text{m}$, in which r is a diameter of the optical fiber. It is clear from Figure 6 of Velsher et al. that each optical fiber introducing portion is larger than, but proportional to the size of the optical fiber in order to accurately locate and secure the optical fiber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the width of each optical fiber introducing portion (54) be in a range from $r + 5 \mu\text{m}$ to $r + 200 \mu\text{m}$, and the depth of the optical fiber introducing portion be in a range from $r + 5 \mu\text{m}$ to $r + 200 \mu\text{m}$, in which r is a diameter of the optical fiber, in order to accurately position and secure the optical fiber and ensure that the optical fiber fits into the optical fiber introducing portion, since it has been held that wherein the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233) and that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

Regarding claim 11; Velsher et al. discloses all of the limitations of claim 11 as applied above, except for a thickness of the frame body being in a range from 0.7 mm to 1.8 mm. It is clear from Figures 5 and 6 of Velsher et al. that thickness of the frame body is sized to allow the optical element (50) and the substrate supporting the optical element to fit within the package, while minimizing the space inside the package to ensure that the optical package is compact. It would have been obvious to one having

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ordinary skill in the art at the time the invention was made to have a thickness of the frame body be in a range from 0.7 mm to 1.8 mm., in order to allow an optical element and substrate supporting the optical element to fit within the package, while minimizing the space inside the package to ensure that the optical package is compact, since it has been held that wherein the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233) and that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

Conclusion

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Sasaki et al. (US 5,727,104) and Cohen et al. (US 6,502,999 B1) each disclose optical modules having optical fibers fixed thereto in a substantially U-

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shaped groove formed on a side of a frame body that surrounds an optical element placement portion (see the Figures).

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

Michelle R. Connelly-Cushwa
Michelle R. Connelly-Cushwa
Patent Examiner
March 8, 2005